YALE UNIVERSITY
OSBORN BOTANICAL LABORATORY
NEW HAVEN, CONNECTICUT

May 2, 1949

Dr. Joshua Lederberg
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Madison, Wisconsin

Dear Josh:

I am very apologetic for not replying to your recent letters. My procrastination has been the result primarily of the time-of-year. We are turning out about 7 Ph.D!s this year and they have all wanted their theses read and commented upon in the past two weeks, which has kept me pretty solidly busy reading.

I am sending off by the same mail a gram of OMPG and trust that this may serve your needs. You commented that you were thinking of trying a chromatic separation of bacterial lactase. We have been remarkably successful using, not a chromatographic technique, but paper strip separation and even much better, the use of starch columns. We have found using the Neurospora preparation that it is possible to move the lactase fraction through a starch column and obtain lactase in a very limited fraction freed of the bulk of impurities. We are only now attempting the use of another buffer mixtures and other solvent systems. The experiments we have done, we have used the enzyme preparation in dilute buffer of pH 5.5. I have [use] a1 cc. of such a preparation on a small starch column which yields a 100% of the activity free of about 90% of the added protein constituents. I have tried several experiments using paper strips in which I have used a solvent system of ammonia sulphate solutions and acetone solutions. I find in these experiments that lactase as a rule moves with [the] fast components, but I had been unable to seriously cut down the rate of ~~number~~ [movement] on paper ~~but~~ using say 60-70% saturation with ammonia sulphate. Our tests for activity have been down very simply by using the OMGP in agar in large petri plates and placing a paper strip directly on the surface. After incubation for a couple of hours, the plate is flooded with alkali and we have had very good success in then picking out the lactase spots.

Paper stripping has given us much stronger evidence of their being two galactosidases in Neurospora. In limited tries I have found that indeed two spots of lactase activity show on paper stripping. This would support other experimental data of ours that the wild type has indeed an enzyme with lactase activity which is normally present that that "lactase" appears after growth on lactose itself.

I will be glad to send along some Neurospora lactase but we probably won't have any decent preparations until about the end of the month. I will then send it along. I might point out that the starch method and paper strip method when worked out in greater detail becomes very potent for the separation of genetical altered enzymes. Actually I haven't done much work on lactase this past month since the tryp-nicotinic business has been working up and we are beginning now to get concrete data suggesting that tryptophane does not serve as a precursor of nicotinic and that indeed the ~~tryp~~ [trouble] with the strains resides in metabolism of anthranilic acid. We should know more about that very shortly.

With very best regards,

Very sincerely yours,

Dave

Gableman will be in Madison this week - + can give you the [illegible] on this place

DMBonner/z

Betty was asleep on this - but I think you can get the general idea